

A NEW SPECIES OF *VITRONURA* YOSII, 1969 (COLLEMBOLA, NEANURIDAE) FROM NORTHWESTERN CHINA

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Abstract A new species of the genus *Vitronura* Yosii, 1969 from Shaanxi Province in the Northwest of China is described and illustrated. The new species, *Vitronura shaanxiensis* differs from other *Vitronura* species in the presence of a seven-teeth mandible and strong reduction of dorsal chaetotaxy on head. A key to the Chinese species of the genus is given as well.

Key words Collembola, Neanuridae, Paleonurini, *Vitronura*, new species.

1 Introduction

The subgenus *Vitronura* was erected by Yosii (1969) in the genus *Neanura* MacGillivray, 1893 and designated *Neanura mandarina* Yosii, 1954 as its type species. Later, the subgenus *Vitronura* was raised to generic status (Cassagnau, 1980). It was proposed to place in tribe Lobellini by Cassagnau and Deharveng (1981), later, was moved to Blasconurini (Cassagnau, 1983) and to Paleonurini (Cassagnau, 1989). Genus *Vitronura* differs from other genera of the tribe Paleonurini by the presence of separate tubercles Fr and An on dorsal side of head. Up to present, 14 known species were reported mainly from Southeast and Eastern Asia, of which only 5 species were reported from China. In the present paper, a new species of *Vitronura* is described and illustrated.

2 Material and Methods

All specimens were collected from China, Shaanxi Province, Ganggao County, Shenxian Cave, 27 Sep. 1997. Six specimens were mounted on the slides using Hoyer's medium and dried for 4–5 days in oven at 50 °C. The morphological characters were observed and drew with Nikon phase contrast microscope (E600). All types Deposited in Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences.

3 Terminology

The terminology and layout of the tables used in this paper follow Deharveng (1983), Deharveng & Weiner (1984) and Greenslade & Deharveng (1990), abbreviations used in this paper as follows.

General morphology. abd. - abdomen, ant. - antenna, Cx - coxa, Fe - Femur, Scx2 - subcoxa 2, T

- tibiotarsus, th. - thorax, Tr - trochanter, VT - ventral tube.

Groups of chaetae. Ag - antegenital, An - anal, Fu - furcal, Ve - ventroexternal, Vi - ventrointernal, VI - ventrolateral.

Tubercles. An - anterinal, Fr - frontal, Cl - clypeal, De - Dorsoexternal, Di - dorsointernal, Dl - dorsolateral, L - lateral, Oc - ocular, So - subocular.

Types of chaetae. Mi - long macrochaeta, Mc - short macrochaeta, me - mesochaeta, mi - microchaeta, ms - s-microchaeta, S - sensillum, or - organite of antenna IV, i - ordinary chaeta on antenna IV, mou - thin cylindrical sensilla on ant. IV ("soies mousses"), x - labial papilla x.

4 Taxonomy

Vitronura shaanxiensis sp. nov. (Figs 1–11)

Type material. Holotype. Female, China, Shaanxi Province, Ganggao County, Shenxian Cave, 27 Sep. 1997. Collector unknown. Paratype: 3 males and 2 females. The specimens are deposited in Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences.

Description. Body length up to 1.5 mm. Body color. White in alcohol.

Head. head hypognathous. Eyes 2+2, without pigment (Fig. 1). Postantennal organ absent. Antenna shorter than diagonal of the head, and 4-segmented. Respectively with 7 and 11 setae on Ant. I and II. Ant. III dorsally fused with ant. IV. Ant. III organ consists of 2 short rods and two relative long sensory setae (sgd and sgv). Ventral ms presents. Ant. IV with bilobed apical bulb, dorsally with 8s, i seta, os and 12 mou (Fig. 3). Labrum chaetotaxy as

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Figs 1 – 11. *Vitronura shaanxiensis* sp. nov. 1. Dorsum of head and thorax. 2. Dorsum of abdomen. 3. Antenna. 4. Labrum. 5. Labium. 6. Mandible. 7. Maxilla. 8. Hind leg. 9. Chaeta types. (a – f. Dorsal chaetae of head, thorax and abdomen. a – b. Mi. c. Me. d. Mi. e. S. f. Ms. g – l. Chaetae on sterna. g. Mi. h – j. Me. k. Mi. l. Ms.) 10. Ventral tube. 11. Sterna of abd. I – IV. Scale bars: 1 – 3, 8 – 9 = 50 μ m, 4 – 7 = 20 μ m, 10 = 25 μ m, 11 = 100 μ m.

0/2, 2. (Fig. 4). Labium as in Fig. 5, without x papilla. Mandible with 7 teeth (4 apical and 3 basal, Fig. 6). Maxilla styliform, apex hook-like (Fig. 7).

Chaetae types on body shown in Fig. 9. Cephalic tubercles and chaetotaxy see Fig. 1 and Table 1, Dorsal macrochaetae (Figs 9a, 9b) and mesochaetae

(Fig. 9c) similar to those on thorax and abdomen, serrate, thick and apically blunt, microchaetae somewhat serrate. All dorsal Cephalic tubercles (except Fr) independent, tubercle Cl with 2 microchaetae and 2 mesochaetae, tubercle An with one macrochaeta and one microchaeta, tubercle Fr with 2 macrochaetae, without O-seta.

Thoracic and abdominal tubercles and chaetotaxy shown in Figs 1–2 and Table 2. Sensory setae (Fig. 9e) and s-micorseta (Fig. 9f) formula as 0, 2, 2 + ms/1, 1, 1, 1, 1. Each tubercle on abd. VI with 7 chaetae.

Appendages. Chaetotaxy of legs, ventral tube and furcular remnant shown in Table 2. Ventral tube with 4 + 4 setae (Fig. 10), furcular vestige with 3–4 setae (Fig. 11). Unguis with transverse striae,

without inner or lateral teeth. Unguiculus absent (Fig. 8).

Table 1. Cephalic tubercles and chaetotaxy of *Vitronura shaanxiensis* sp. nov.

Tubercl	Number and type of setae	Names of setae
Cl	2Me	F
	2Mi	G
An	1Mi	B
	1Mi	E
Fr	2 Mi	A
Oc	1Mi	Ocm
Di	1Mi	Di2
De	1Mi	De1
Di + L + So	8 (Mi, Mc, Mi)	uncertain

Table 2. Body tubercles and chaetotaxy of *Vitronura shaanxiensis* sp. nov.

Terga					Legs				
	Di	De	Di	L	Scx2	Cx	Tr	Fe	T
Th. I	1	2	1	–	0	3	6	13	19
Th. II	3	2 + s	2 + s	2 (3)	2	8	6	12	19
Th. III	3	3 + s	2 + s + ms	2	2	8	6	11	18
Terga					Sterna				
Abd. I	2	3 + s	2	2	VT	4			
Abd. II	2	3 + s	2	2	Ve	4		VI	–
Abd. III	2	3 + s	2	2	Ve	3		Fu	4 (3)
Abd. IV	2	3 + s	2	2	Ve	9 (8)	VI	7	
Abd. V	3		3 + s		Ag	4	VI	–	
Abd. VI			7		Ve	16	Ve	3	

Etymology. The new species is named after the type locality Shaanxi.

Ecology. Unknown.

Diagnosis. The new species has 7 teeth on mandible, 4 chaetae on labrum, 2 chaetae on Tubercl An, and 3 chaetae on tubercle Di of Th. II–III, 3 + s on tubercle De of abd. I–IV, separated Di tubercles on abd. V, these characters can separate it from all known species of the genus.

Discussion. The new species seems to be similar to *V. sinica* Yosii, 1976 from Hong Kong and to *V. mascula* Smolis and Deharveng, 2006 from Vietnam, because all the three species have reduction number of dorsal chaetae on head and have no teeth on claw. But the new species can be separated from *V. sinica* by having 7 teeth on mandible and separated Di tubercles on abd. V (in *V. sinica*, mandible tridentate, Di tubercles on abd. V fused each other). *V. shaanxiensis* sp. nov. differs from *V. mascula* by number of teeth on mandible, chaetae on labrum, chaetae on dorsum of head and terga. The former has 7 teeth on mandible, 4 chaetae on labrum, 2 chaetae on Tubercl An, and 3 chaetae on tubercle Di of Th. II–III, 3 + s on tubercle De of abd. I–IV respectively; the latter has

3 teeth on mandible, 6 chaetae on labrum, 1 chaeta on Tubercl An, and 2 chaetae on tubercle Di of Th. II–III, 2 + s on tubercle De of abd. I–IV respectively. The unique mandible and body setae of the new species can also differentiate it from all known species of the genus.

List of Chinese *Vitronura* species as follows.

V. latior (Rusek, 1967), Guangdong.
V. pygmaea (Yosii, 1954), Taiwan (*sensu* Yosii, 1976).
V. shaanxiensis sp. nov. Shaanxi.
V. singaporiensis (Yosii, 1959), Taiwan (*sensu* Yosii, 1976).
V. sinica (Yosii, 1956), Hongkong (*sensu* Yosii, 1976).
V. tuberculata Lee and Kim, 1990. Taiwan.

Key to Chinese *Vitronura* species.

1 Tubercl Oc on the head with 1 or 2 chaetae 2
 Tubercl Oc on the head with 3 chaetae *V. singaporiensis*
 2 Tubercl Oc on the head with 1 chaeta *V. shaanxiensis* sp. nov.
 Tubercl Oc on the head with 2 chaetae 3
 3 Tubercl Di on the head fused along midline *V. tuberculata*
 Tubercl Di on the head separate 4
 4 Chaetae O on the head absent *V. sinica*
 Chaetae O on the head present 5
 5 Tubercl Di on Th. I with 1 chaeta *V. pygmaea*
 Tubercl Di on Th. I with 2 chaeta *V. latior*

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REFERENCES

Cassagnau, P. 1980. Nouveaux critères pour un redécoupage phylogénétique des Collemboles Neanurinae (S. Massoud, 1967). In: Dallai, R. (ed.), 1st International Seminar on Apterygota, Siena. 1978: 115–132.

Cassagnau, P. and Deharveng, L. 1981. Sur le genre *Vitronura* (Collemboles, Neanuridae): aspect systématique et approche cytogénétique. *Bulletin du Muséum National d'Histoire Naturelle, Paris*, 4 (3): 151–173.

Cassagnau, P. 1983. Un nouveau Modèle phylogénétique chez les Collemboles neanurinae. *Nouvelle Revue d'Entomologie*, 13: 3–27.

Cassagnau, P. 1989. Les Collemboles Neanurinae; Éléments pour une synthèse phylogénétique et biogéographique (pp. 271–182). In: Dallai, R. (ed.), 3rd International Seminar on Apterygota, Siena. 171–182.

Deharveng, L. 1983. Morphologie évolutive des Collembolae Neanurinae en particulier de la lignée Neanurinae. *Travaux du Laboratoire d'Écobiologie des Arthropodes Edaphiques, Toulouse*, 4 (2): 1–63.

Deharveng, L. and Weiner, W. 1984. Collemboles de Corse du Nord III-Morulinae et Neanurinae. *Travaux du Laboratoire d'Écobiologie des*

Arthropodes Edaphiques, Toulouse, 4 (4): 1–61.

Greenslade, P. and Deharveng, L. 1990. Australian species of the genus *Australomura* (Collembola, Neanuridae). *Invertebrate Taxonomy*, 3: 565–593.

Lee, B. H. and Kim, J. T. 1990. Systematic Studies on Chinese Collembola (Insecta) II. Five new species and two new records from Taiwan in the family Neanuridae. *The Korean Journal of Systematic Zoology*, 6 (2): 235–250.

Rusek, J. 1967. Beitrag zur Kenntnis der Collembola (Apterygota) Chinas. *Acta Entomologica Bohemoslovaca*, 64 (3): 184–194.

Smolis, A. and Deharveng, L. 2006. *Vitronura mascula*, a new species of Neanurinae (Collembola: Neanuridae) from Northern Vietnam, with a key to the species of the genus. *Revue Suisse de Zoologie*, 113 (2): 263–268.

Yosii, R. 1954. Springschwänze des Ozé-Naturschutzgebietes. Scientific Researches of the Ozegahara Moor. pp. 777–830.

Yosii, R. 1969. Collembola-Arthropoda of the IBP-Station in the Shiga Heights, Central Japan, I. *Bulletin of the National Science Museum Tokyo*, 12 (3): 531–556.

Yosii, R. 1976. On some Neanurid Collembola of Southeast Asia. *Nature and Life in South East Asia*, 7: 257–299.

中国西北地区维特疣蟋属一新种(弹尾纲, 疣蟋科)

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摘要 描述了采自中国西北地区的维特疣蟋属 *Vitronura* 1 新种——陕西维特疣蟋, 模式标本保存在中国科学院上海生命科学研究院。新种与属内其它种的区别在于上颚具有 7 齿, 上唇有 4 根毛, 头部背面毛的数量明显少于其它种类,

关键词 弹尾纲, 疣蟋科, 古疣蟋族, 维特疣蟋属, 新种。

中图分类号 Q969.14

An 疣上有 2 根毛, 胸部第 2~3 节的 Di 疣上分别有 3 根毛, 腹部第 1~4 节 De 疣上分别有 3 根普通毛和 1 根感觉毛, 腹部第 5 节的 Di 疣互相分离。文中同时还编制了该属中国种类检索表。